



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,744	09/22/2006	Osamu Kasono	046969-5542	3017
55694 7590 12/03/2009 DRINKER BIDDLE & REATH (DC) 1500 K STREET, N.W. SUITE 1100 WASHINGTON, DC 20005-1209				
EXAMINER RIDDLE, CHRISTINA A				
ART UNIT		PAPER NUMBER		
2882				
MAIL DATE		DELIVERY MODE		
12/03/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/593,744

**Applicant(s)**

KASONO ET AL.

**Examiner**

Christina Riddle

**Art Unit**

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 October 2009.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-9 and 11-21 is/are pending in the application.  
4a) Of the above claim(s) 11-21 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 7-9 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 22 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SB-06)  
Paper No(s)/Mail Date 12/5/2006  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Priority***

1. Acknowledgement is made that the instant application is a national stage entry of application PCT/JP05/06525 filed on 3/28/2005 which claims priority from JP 2004-097471 filed on 3/30/2004.

### ***Election/Restrictions***

2. Applicant's election of Group I, claims 7-9, in the reply filed on 10/27/2009 is acknowledged. Because Applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP 818.03(a)). Claims 11-21 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ryding et al. (US Patent No. 6,689,221, Ryding hereinafter) in view of Cuijpers et al. (US Patent No. 6,473,161, hereinafter Cuijpers).

**Regarding claim 7**, Ryding discloses a substrate mount portion (electrostatic chuck (ESC) 108 with support surface 110 and cooling plate 111, Figs. 1-4) for holding the substrate (Figs. 1-4, electrostatic chuck 108 holds wafer 101);

a spindle (spindle 114, Figs. 1-4) for rotating the substrate mount portion (Figs. 1-4, spindle 114 is coupled to motor 124 to rotate the spindle and ESC 108),

a conduit pipe (fluid lines 121, Figs. 1-3) for supplying cooling fluid through the bearing portion and the spindle to the substrate mount portion (Figs. 1-3 and col. 4, lines 23-34, fluid lines 121 extend through spindle 114 and connect into cooling plate 111 from a source external to housing 102, thus the fluid lines 121 extend through the bearing portion). However, Ryding does not appear to explicitly describe a fluid bearing portion for holding the spindle.

However, Cuijpers discloses a fluid bearing portion for holding the spindle (Figs. 4-7, gas bearings 111 and 133 hold piston 101).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have replaced a fluid bearing portion for holding the spindle as taught by Cuijpers in the place of the bearings holding the spindle and substrate mount portion taught by Ryding since, as shown by Cuijpers, a fluid bearing is commonly used to hold a spindle in order to provide a frictionless movement between two structures (col. 2, lines 23-25).

**Regarding claim 8**, although Ryding discloses cooling fluid supplied to a conduit pipe provided in the spindle (Figs. 1-3, and col. 4, lines 23-34, cooling fluid is supplied to fluid lines 121 in spindle 114), Ryding does not appear to explicitly describe wherein the spindle has a groove portion through which the cooling fluid supplied through the fluid bearing portion is taken into the conduit pipe.

However, Cuijpers discloses wherein the spindle has a groove portion (pressure chamber 122, Figs. 4-7) through which the fluid supplied through the fluid bearing portion is taken into the conduit pipe provided in the spindle (Figs. 4-7, pressure chamber 122 provides gas from gas bearing 111 to channels 105 in piston 101).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included a groove portion through which fluid is supplied to the conduit pipe as taught by Cuijpers in the spindle and substrate mount portion taught by Ryding since, as shown by Cuijpers, a groove portion through which fluid is supplied to the conduit pipe through the fluid bearing portion is commonly used to minimize pressure fluctuations in the fluid bearing that may be transferred to the conduit pipe, thereby providing a buffer to ensure optimal cooling.

**Regarding claim 9**, Ryding discloses a cooling fluid supply portion (not shown, cooling fluid source, see col. 4, lines 23-34) and a cooling fluid supply conduit pipe (portion of fluid lines 121 extending though the bottom of housing 112 from spindle 114, Figs. 1-3) for supplying cooling fluid from the cooling fluid supply portion to the conduit pipe provided in the spindle (Figs. 1-3, and col. 4, lines 23-34, cooling fluid is supplied to fluid lines 121 in spindle 114).

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Segers et al. (US Patent No. 6,721,035) discloses a rotation unit for a substrate in an exposure apparatus.

Halpin et al. (US Patent No. 6,113,702) discloses a rotatable wafer support.

Cho et al. (US Patent No. 6,214,121) discloses a thermally controlled substrate support.

Emoto (US PGPub 2001/0055102) discloses a cooled wafer stage supported by air bearings in a lithographic tool.

Kimura (US Patent No. 5,578,127) discloses a cooled spin chuck for supporting a wafer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Riddle whose telephone number is (571)270-7538. The examiner can normally be reached on Monday- Thursday 7:00-17:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571)272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter B. Kim/  
Primary Examiner, Art Unit 2882

/C. R./  
Examiner, Art Unit 2882